DOCUMENT RESUME

ED 259 071 UD 024 347

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TITLE Poverty and Educational Achievement: An Analysis Plan.
INSTITUTION Child Trends, Inc., Washington, DC.
SPONS AGENCY National Inst. of Education (ED), Washington, DC.
PUB DATE Mar 85
CONTRACT P-84-0055
NOTE 52p.; For a related document, see UD 024 346.
PUB TYPE Reports - Evaluative/Feasibility (142) -- Viewpoints (120)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Academic Achievement; *Compensatory Education; Databases; *Demography; Economically Disadvantaged; *Economic Factors; Educationally Disadvantaged; *Educational Quality; Elementary Secondary Education; Family Income; Low Income Groups; Population Trends; *Poverty; Research Needs; *Trend Analysis

ABSTRACT

This paper describes a series of proposed analyses that would make use of existing information from national surveys of the school-aged population and other large-scale databases in order to illuminate trends in the makeup, life circumstances, schooling, and educational achievement of the population of United States children that is eligible for compensatory education services. The proposed analyses address the following major questions (1) What are the demographic characteristics of United States children from low-income families, and how have these characteristics changed over time? (2) What is the latest statistical evidence about the relationship between poverty and educational achievement, and is there any sign that this relationship has changed over time? (3) What is the latest statistical evidence about the relationship between poverty and the quality of educational services received by students, and is there any sign that this relationship has changed? (4) What are some of the implications of the demographic characteristics and population trends for the organization and delivery of compensatory education services? For each proposed analysis, the paper provides the following: the purpose of the analysis; the rationale for carrying it out; the databases that could be used to provide the required information; the steps involved in analyzing these data; an estimate of the effort required; and suggestions for coordinating the task with the other proposed analyses. In addition, the report contains selected references to previous studies on the same or related topics, and to written descriptions of the recommended databases. (KH)

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Poverty and Educational Achievement: An Analysis Plan

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March 1985

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A commissioned paper prepared for the Chapter 1 Study,
Educational Policy and Organization Division
National Institute of Education
under contract number
NIE-P-84-0055

UD024 347

TABLE OF CONTENTS

Introduction 1

Analytic Task #1. Describing Change Over Time in the Demographic Characteristics of the Low-Income Student Population 3

Analytic Task #2. Relating Income and Achievement (Individual Student Level) 11

Analytic Task #3. Relating Income and Achievement (School and District Level) 21

Analytic Task #4. Relating Income and Quality of Educational Services (Individual Student Level) 25

Analytic Task #5. Relating Income and Quality of Educational Services (School District Level) 30

Analytic Task #6. Comparing Poor Children in Low-Income Districts with Poor Children from Other Districts 32

Analytic Task #7. Relating Maternal Employment and Participation in Preschool Programs to the Achievement of Children from Low-Income Families 36

Analytic Task #8. Assessing the Need for Strengthening Compensatory Education Programs at the Secondary School Level 42

Analytic Task #9. Relating Frequent Residential Moves to the Achievement of Children from Low-Income Families 45

References 47

Introduction

In Title I of the Elementary and Secondary Education Act of 1965, the Congress of the United States made the following Declaration of Policy:

> "In recognition of the special educational needs of children of low-income families and the impact that concentrations of low-income families have on the ability of local educational agencies to support adequate educational programs. the Congress hereby declares it to be the policy of the United States to provide financial assistance . . . to local educational agencies serving areas with concentrations of children from low-income families to expand and improve their educational programs by various means (including preschool programs) which contribute particularly to meeting the special educational needs of educationally deprived children."
>
> (20 U.S.C. 241a) Originally enacted April 11, 1965, P.L. 89-10, Title I. sex. 2, 79 Stat. 27.

In 1983. Congress mandated that the Secretary of Education should conduct a broad "national assessment" of the condition of the compensatory education programs that were being carried out by state and local educational agencies with the assistance of federal funds. These programs. which had originally been funded under Title I of the Elementary and Secondary Education Act, were now being supported under Chapter I of the Education Consolidation and Improvement Act (ECIA). As part of a series of technical amendments to that act, the National Institute of Education was instructed to conduct "independent studies and analysis" of compensatory education and to prepare a series of reports that could be considered by Congress when the time came to reauthorize Chapter 1 in 1987.

This paper, commissioned by the National Institute of Education, describes a series of proposed analyses that would make use of existing information from national surveys of the school-aged population and other large-scale databases in order to illuminate trends in the make-up, life circumstances, schooling, and educational achievement of the population of U.S. children that is eligible for compensatory education services.

The proposed analyses address the following major questions:

A. What are the demographic characteristics of U.S. children from low-income families, and how have these characteristics changed over time? (Analytic Task #1)

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B. What is the latest statistical evidence about the relationship between poverty and educational achievement, and is there any sign that this relationship has changed over time? (Analytic Tasks #2 and #3)

C. What is the latest statistical evidence about the relationship between poverty and the quality of educational services received by students, and is there any sign that this relationship has changed? (Analytic Tasks #4 and #5)

D. What are some of the implications of the demographic characteristics and population trends for the organization and delivery of compensatory education services? (Analytic Tasks #6-#9)

For each of the analytic tasks described in the body of the paper, the author has tried to explain why and how the analysis should be carried out. Specifically, each task description covers:

1) the purpose of the analysis;
2) the rationale for carrying it out;
3) the databases that could be used to provide the required information;
4) the steps involved in analyzing these data;
5) an estimate of the effort required; and
6) suggestions for coordinating the task with the other proposed analyses.

In addition, the report contains selected references to previous studies on the same or related topics, and to written descriptions of the recommended databases. (More extensive references may be found in a related commissioned paper prepared by James L. Peterson.)

The author hopes that this document will be useful both to those who plan the program of studies for the Chapter 1 assessment and to those who eventually carry out the actual analyses. It should be noted, despite the specificity of some of the task descriptions, that the document is not intended as a rigid plan that must be followed in cookbook fashion. Rather, it is meant to point out data resources that should be taken advantage of in the Chapter 1 assessment, and possible paths to follow in mining these resources. Once the analyses are actually begun, the nature of the findings (and, unfortunately, the limitations of the data sets) will dictate the course that is ultimately taken.

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ANALYTIC TASK #1

Describing Change Over Time in the Demographic Characteristics of the Low-Income Student Population

PURPOSE:

To provide quantitative evidence on how children of low-income families are different now than they were when the federal compensatory education program was first enacted twenty years ago. Specifically, to focus on a number of demographic changes that have a bearing on educational achievement and that have not been well documented in earlier studies. These changes include: increases in maternal education levels; reductions in average family size; increases in the proportion of children enrolled in preschool and kindergarten programs; changes in the ethnic composition of the low-income population; changes in the proportion who are recent immigrants and/or from non-English-speaking family backgrounds; changes in maternal employment patterns; changes in the receipt of AFDC, food stamps, and other non-cash benefits; and changes in the residential distribution and mobility of the low-income population.

RATIONALE:

In order to make an informed evaluation of the possible reauthorization and/or modification of the federal compensatory education program, Congress and the Administration should have a good understanding of how the composition and living conditions of the low-income child population of the U.S. have changed over the last twenty years. Some of the relevant social changes are well known. such as the growth of female-headed families and the so-called "feminization of poverty." But other trends that may have significant educational implications have not been well documented or widely publicized. Among these are: dramatic increases in parent education levels among black families; sharp reductions in family size (number of children) among low-income and minority populations; and recent changes in migration and immigration patterns that may have altered the geographic distribution and educational needs of the low-income child population.

The present task involves the use of data from several years of the Census Bureau's Current Population survey to document some of the major changes that have occurred within the low-income

student population, especially recent developments that may have reversed or accentuated the trends of the 1960's and '70's. Possible educational implications of some of the trends are considered in the analytic tasks described later in this report.

RECOMMENDED DATABASES:

The suggested database for this task is the Census Bureau's Current Population Survey (CPS); in particular, the March Income and Demographic Supplement to the CPS. In order to track change over time, it will be necessary to obtain data from several years of the March CPS. The suggested years are: 1984, 1983, 1982, 1980, 1978, and 1970. If, because of limited resources, it is necessary to reduce the number of years examined in this analysis, it is recommended that trends over several of the more recent years (specifically, 1978, 1982, and 1984) be the major focus of the analysis, with information about longer-term trends being obtained from earlier published analyses or other analytic work that is now in progress (such as Donald Hernandez' analyses for the 1980 Census monograph on children).

The data required for this analysis could be obtained in several different ways: by making use of existing Census tabulations, both published and in pre-publication form; by commissioning special tabulations from the Census Bureau; or by obtaining public-use data tapes from the CPS and carrying out the necessary tabulating operations oneself. In order to have the greatest analytic flexibility and to produce the most useful results within the time limitations of the Chapter I assessment, the third course of action is probably the option of choice. However, existing tabulations and the results of earlier analytic work should be used whenever possible. Indeed, it may be essential to do so because of resource limitations and because some of the required information is not contained in the March CPS data tapes, but rather in other supplements (see below).

There are two other national databases from the Bureau of the Census that could be considered for use in this task: the decennial Census public-use samples for 1980 and 1970 (and perhaps for 1960 as well); and the recently initiated Survey of Income and Program Participation (SIPP). The problem with the decennial Census is that it provides no data

more recent than 1980. Moreover, there are some problems in making comparisons between the decennial Census and the Current Population Survey because of differences in sample coverage, question wordings, time frame, and/or mode of administration. Because of the different biases of the two programs, it is probably safer to make trend comparisons across different years of the CPS than between the CPS and the decennial Census, even for years when the much larger Census public-use sample is available. As for the SIPP, it has practically no historical record from which trends may be developed, and across-time comparisons between it and other data sources, such as the CPS, would have some of the same comparability problems as comparisons between the CPS and the decennial Census. In addition, the SIPP data files are complex and relatively untested, so there may be difficulties in getting usable results from this data set within the time limits of the Chapter I assessment. For these reasons, use of the SIPP for this analytic task is not recommended.

The basic CPS questionnaire and the March Income and Demographic Supplement can provide the following variables for use in this analytic task: the income level and poverty status of the family; race and Hispanic background; whether the family has two parents or only one parent in the household (but not whether there is a stepparent or adoptive parent); the number and ages of the children in the household; the educational attainment of the parent or parents; the employment status of the parent or parents; receipt of AFDC, food stamps, and other non-cash benefits; residential location (i.e., region, SMSA or non-SMSA, and within SMSA, size of central city and whether the residence is inside or outside the central city); limited information on residential mobility (i.e., whether the family lived in the same household a year earlier and, if not, the location of the place where they lived at that time); and limited information on immigrant status (i.e., if the place where the family lived a year earlier was outside of the U.S.A., that fact is coded).

It will be necessary to turn to other CPS supplements for some of the other data called for in this analysis. Specifically:

-- for trends in preschool and kindergarten enrollment among 3-5-year-olds from low-income families, the analyst will have to make use of the October Education Supplements to the CPS;

-- for data on the proportion of low-income children who are from non-English-speaking families, the analyst will have to turn to special CPS supplements that included information on language spoken in the home, such as the November 1979 Supplement on Ethnic Background and Literacy, and perhaps to non-CPS sources, such as the 1982 English Language Proficiency Study, as well;

-- for a better assessment of the proportion of the low-income child population that is foreign born or the children of recent immigrants, the analyst should turn to special supplements that have dealt with immigration and immigrant fertility, such as the April 1983 CPS Supplement; and finally

-- for more precision on trends in family structure and family size, the analyst should make use of the June Fertility Supplements to the CPS, especially the more extended editions, such as the June 1980 Supplement.

ANALYSIS PROCEDURE:

Once the public-use data tapes for the March CPS in the selected years have been obtained and made operational on the analyst's computer system, a series of child-based statistics should be calculated from each year's data. The population estimates, proportions, and means specified below should be developed for all children aged 0-17 and for a number of other population subgroups. The subgroups should include: all poor children; poor children of different age groups; poor children of different ethnic groups, etc. The subgroups would be formed by combining the following analytic dimensions:

Dimensions for forming population subgroups

Age of Child
1. All ages (0-17)
2. Preschool ages (3-5)
3. Elementary school ages (6-11)
4. Secondary school ages (12-17)

Poverty Status of Family
1. All family income levels
2. Families below official poverty line (the poor)
3. Families above poverty line but below 125% of poverty line (the near-poor)
4. Families above official poverty line (the non-poor)

Ethnic Group

1. All ethnic groups
2. Black children
3. Hispanic children
4. Asian children
5. Non-minority children

It is recommended that one other subgroup be formed by selecting all children whose families are below the official poverty line and where the mother's education level is below the high school graduate level. This would represent a relatively disadvantaged subset of the low-income child population.

For each survey year and each of the subgroups specified above, the following statistics (and appropriate standard errors) should be derived.

Demographic Indicators from March CPS

Size of the population groups

1. Estimated size of population subgroup in U.S. population (numbers)
2 Size of the subgroup as a proportion of total U.S. child population in that age range

Ethnic composition

3. Proportion of subgroup that is made up of black children
4. Proportion of subgroup that is made up of Hispanic children

Female-headed Families

5. Proportion of subgroup where the mother is the only parent living in the household

Maternal Education

6. Mean years of mother's regular schooling
7. Mean years of school received by the more educated parent in the household
8. Proportion of children in subgroup whose mothers have not completed high school
9. Proportion of children in subgroup whose mothers have completed one or more years of college

Family Size

10. Mean number of other children below age 18 in household (besides subject child)

Maternal Employment

11. Proportion of children in subgroup whose mothers were employed at any time in the last year

12. Proportion of children in subgroup whose mothers worked full-time, full-year

Receipt of AFDC and other benefits

13. Proportion of children in subgroup whose families received AFDC in the last year
14. Proportion of children in subgroup whose families received food stamps in last year
15. Proportion of children in subgroup whose families received Medicaid in last year
16. Proportion of children in subgroup whose families lived in subsidized housing
17. Proportion of children who received free or reduced-price meals at school
18. Proportion of children whose families received any cash or non-cash benefit

Geographic distribution of poor child population

19-22. Proportion of children in subgroup living in each of the four major regions of the country (Northeast, South, Midwest, West)
23. Proportion of children in subgroup living in center cities of SMSA's
24. Proportion of children in subgroup living in SMSA's, but outside center cities
25. Proportion living in low-income areas (if available from CPS tapes)

Residential mobility, migration, and immigration

26. Proportion of children in subgroup who lived in same house or apartment one year ago
27. Proportion of children in subgroup whose families moved from non-SMSA to SMSA in last year (net migration)
28. Proportion of children in subgroup whose families moved from center city to suburban area of SMSA in last year (net migration)
29. Proportion of children in subgroup whose families moved from "Frostbelt" (Northeast or Midwest) to "Sunbelt" (South or West) in last year (net migration)
30. Proportion of children whose families moved into U.S. from another country in last year (gross immigration)

The following demographic indicators cannot be derived from the March CPS, but should be developed from other CPS supplements (or other sources described above) if at all possible. These indicators should be calculated for as many of the same years and as many of the same population subgroups as possible.

Indicators from Other Sources

Children of recent immigrants

31. Proportion of children in subgroup who were born abroad or whose families immigrated to the U.S. in the last 5 years

Children from Non-English Speaking Backgrounds

32. Proportion of children in subgroup where English is not the primary language spoken in the home

Preschool and Private School Enrollments

33. Proportion of preschool-aged (3-5) children in each of the relevant subgroups who are currently enrolled in a preschool or kindergarten program
34. Proportion of all children in relevant subgroups who are enrolled in private schools

High-school dropouts

35. Proportion of all older adolescents (15-17) in each of the relevant subgroups who are not currently enrolled in school

Once the indicators for all of the selected years have been calculated, the charting and analysis of change over time can proceed. This involves testing the statistical significance of observed changes over time in the demographic indicators. It may also involve fitting a trend line or curve to the observed changes and testing for goodness of fit. The analyst should also test for changes over time in the size of differences between subgroups (e.g., poor versus non-poor, black versus white, etc.). In examining apparent changes over time, the analyst should be sensitive to possible changes in question wording or format, sample coverage, or interviewing or coding procedures during the years in question. Such variations could produce artifactual differences in means or proportions from one year to another. Information about procedural variations may be obtained from the staff of the Census Bureau.

LEVEL OF EFFORT:

It is estimated that carrying out and writing up this analysis task would require approximately nine months of effort for a Ph.D.-level analyst plus 6 months of programming and 3 months of secretarial support.

COORDINATION WITH OTHER TASKS:

This task should be coordinated with other tasks which involve the use of data from the Current Population Survey. An example is Analytic Task #2 (see below), which makes use of the October Education Supplements to the CPS.

ANALYTIC TASK #2: Relating Income and Achievement (Individual Student Level)

PURPOSE: To demonstrate, using the most recent data available, that there is still a substantial relationship between the income level (and/or poverty status) of a family and the academic achievement of children coming from the family. Further, to determine how this relationship varies by age and grade in school, across different indicators of achievement, and when controls are introduced for other background factors that are correlated with income, such as parent education and family structure. In addition, to examine whether and to what extent the relationship between income and achievement seems to have changed over the twenty years since the federal compensatory education program was first enacted.

RATIONALE: The continued existence of a disparity between the achievement of children from low-income families and those from middle- and upper-income families can be taken as evidence that there is still a need for some sort of effort (not necessarily federal) to provide special educational resources to low-income students. In truth, simply showing that a difference exists does not explain why the difference is observed, nor does it demonstrate that compensatory programs do anything to correct the disparity. Nevertheless, there is apt to be a great deal of political interest in raw differences of this sort.

A set of supplementary analyses is suggested to provide at least partial insight into the questions of why disparities are observed and whether compensatory efforts are effective. For example, examining how income-related differences change with age and grade in school, it is possible to ascertain whether substantial group differences already exist when children enter school (previous evidence indicates that they do), and whether these differences grow larger, remain the same, or grow smaller as children progress through the grades.

Examining how the relationship between income and achievement varies across different measures of achievement may allow one to draw some conclusions about how public schools are dealing with the educational difficulties of children from low-income families. If, for example, the

relationship between family income and the child's grade placement is considerably weaker than the relationship between income and test scores, that suggests that schools are promoting children from low-income families more readily than they did in the past, but not really meeting the educational needs of these children.

It is also important to show how the relationship between family income and student achievement changes when the relationship is controlled for other background factors that are correlated with poverty, specifically: parent education, ethnicity, family structure, and family size. Previous studies have found that the strength of the relationship between income and achievement is considerably diminished when these related factors are introduced into the predictive equation. This suggests that the academic difficulties that poor children experience do not stem merely from their families' lack of money, but from parental ignorance, a lack of intellectual stimulation in the home. stress, and perhaps cultural differences as well. These deficiencies will not be corrected by policies and programs aimed solely at boosting the financial well-being of poor families, whether that boosting be done through general stimulation of the economy or through direct financial assistance to low-income households. Rather, some sort of effort aimed specifically at the educational deficiencies would seem to be called for in such a situation. Because of the potential policy implications of the findings, a multivariate analysis of income-related differences in student achievement should be replicated with up-to-date data.

It would be most useful if the Chapter I study could include an analysis showing whether and how the relationship between family income and student achievement has changed since the Title I program was enacted. Such an analysis could provide direct evidence as to whether the income-related achievement gap has narrowed during the period in which the program has been in operation. Unfortunately, the data bases required to perform such an analysis of change over time are not fully available.

There are, of course, data from the National Assessment of Educational Progress (NAEP, 1981) that have already been used to show that since 1970 there has been some reduction in the gap between the reading scores of students from schools in

economically disadvantaged areas and the scores of students in other schools. However, the National Assessment does not collect information on the family income of individual students and its measure of parent education is imperfect, relying as it does on student or teacher report. Thus, it is not possible to carry out a multivariate analysis of change at the individual-student level with NAEP data.

The other available data bases have the problem that, except for grade placement, they do not use precisely identifical measures of achievement at different points in time. Thus, what looks like change over time may really be differences between measuring instruments. It may be possible to reach some reasonable conclusions about change over time despite these limitations, if the available evidence can be assembled into a consistent picture.

RECOMMENDED DATABASES:

There are a number of national databases that could contribute to portions of this task (see summary chart below), but no one data source is suitable for all of the subtasks outlined above. Therefore, it is recommended that several different databases be used. Specifically:

-- For recent data that can be used to relate family income to the student's progress through the grades, the recommended database is the October Education Supplement to the Census Bureau's Current Population Survey (CPS). The data tape for the most recent supplement that Census will make available should be used (1983 or 1984).

-- For recent data that can be used to relate family income to tested achievement, a database that should be considered is the 1982 English Language Proficiency Study (ELPS), that was conducted by the Census Bureau for the Department of Education. Although this study was primarily designed to assess the language proficiency of children from Hispanic and other non-English-speaking minority backgrounds, the sample included children from English-speaking families as well. The test used in the survey (the Language Measurement Assessment Interview) included components covering comprehension of spoken language, word recognition, knowledge of basic grammatical rules, verbal fluency, and reading comprehension. There were different forms

of the test for each single year of age from 5 through 14. The tests probably do not have much discriminatory capability at the top of the achievement continuum, but they appear to be usable for identifying children whose language development is seriously deficient, even if the children are from English-speaking families. (Based on their performance on these tests, 42 percent of the children from English-speaking homes, and 59 percent of those from language-minority families, were judged to have "limited English proficiency," (see The Condition of Education, 1984 edition, pp. 22-23).)

The achievement tests used in other national studies discussed below are better than those used in the ELPS. However, the ELPS data are of more recent vintage, cover a broad age range, and contain information about income, parent education, ethnic background, as well as the child's current grade placement.

-- Both the Current Population Survey and the English Language Proficiency Study may be used to help determine how the relationship between family income and achievement varies by age and grade in school. There are, however, two other databases that are especially suitable for this purpose. One is the Sustaining Effects Study (SES), which contains reading and mathematics achievement test scores, as well as information about grade placement and receipt of special educational resources, for a large national sample of students in grades 1-6. The other is the Health Examination Survey (HES) -- Cycles II and III -- which contains vocabulary, block design, reading, and arithmetic test scores, as well as grade placement and special resources information, for national probability samples of children aged 6-11 and adolescents aged 12-17. Both the SES and the HES also have longitudinal components, which may help to clarify the age and grade effects. One drawback is that these data sets were gathered a number of years ago: 1976-77 in the case of the SES; 1963-65 and 1967-70 in the case of the two HES cycles. However, when examined in conjunction with the more recent CPS and ELPS data, they may provide some insight into whether and how the interaction between family income, student achievement, and student age has changed over time.

-- The four data bases described above -- the CPS, ELPS, SES, and HES -- can also be used to examine how the relationship between family income and

achievement differs across different measures of achievement, and how the relationship changes when controls are introduced for parent education, ethnicity, family structure, and family size. One limitation in all of these data sets is that the information about family structure is imperfect: single-parent families can be distinguished from two-parent families, but families containing a stepparent can generally not be distinguished from families where both biological parents are present. Also, in single-parent families, information about the educational attainment of the absent parent has not been collected.

-- In order to examine how the relationship between family income and student achievement has changed over time, comparisons may be made across the data sets described above: the Health Examination Surveys done in the 1960's, the Sustaining Effects Study done in the 1970's, and the English Language Proficiency Study done in 1982. Unfortunately, as mentioned earlier, such comparisons are complicated by the fact that the different studies did not use the same tests of achievement. This limitation does not apply to the grade placement measure: it is possible to use the studies listed above, or to obtain data tapes from several earlier CPS supplements and use them, to examine how the grade placement of poor children has changed in the last twenty years. However, the problem here is in knowing whether a change means real progress in boosting achievement, or more liberal promotion policies, or a combination of both.

There are two other comparisons that should be considered for the examination of change over time. First, the subset of adolescents who are high school sophomores in the 1967-70 Health Examination Survey could be compared with the sophomores in the 1980 High School and Beyond Survey (HS & B) conducted by the National Center for Education Statistics. Both of these studies contained tests of vocabulary knowledge, reading, and mathematics achievement (although, once again, not the same tests). It would also be necessary to limit the HS & B sample to that subset of sophomores for which parent questionnaires are available, because the parent-supplied data on family income tends to be more accurate than student-supplied data on income. Second, the vocabulary test performance of poor and non-poor children in the 1963-65 Health Examination Survey could be compared with that of poor and non-poor children in the first wave of the National Survey of Children (conducted in 1976).

ANALYSIS PROCEDURE:

Once the requisite data tapes have been obtained, the peculiarities of the data files have been mastered, and a data dictionary has been constructed, the steps involved in carrying out the analyses outlined above are relatively straightforward. Briefly, they are to:

a) select the subset of children and/or adolescents to be examined;

b) develop indices of family income and poverty status (independent variables);

c) develop indices of student achievement (dependent variables);

d) develop indices of parent education, ethnicity, family structure, and family size (control variables);

e) use cross-tabulation and/or regression techniques to relate indices of income and poverty to indices of achievement;

f) express the observed relationships in terms of:
-- raw score differences;
-- effect parameters (differences expressed in standard deviation units);
-- correlation coefficients (or equivalent measures of association); and,
-- the percentage of variance in achievement accounted for by family income or poverty status;

g) split the sample into subgroups by age and grade in school, and relate income to achievement within each of these subgroups;

h) determine whether the effects of income on achievement differ significantly across age and grade groups (i.e., test the three-way interaction of income x achievement x age/grade);

i) using log-linear, multiple classification, or multiple regression analysis, determine how the relationship between income and achievement is modified by the introduction of the control variables specified in d).

Once analysis steps a) - i) have been carried out on each of the data sets specified above, comparisons should be made across data sets. Specifically:

j) either within or across data sets, determine whether the strength of the relationship between income and achievement is significantly stronger when achievement is measured by test scores than when it is measured by grade placement (or other indices of achievement, such as grades or teacher ratings);

k) using comparable (or at least roughly comparable) measures of achievement in different data sets, determine whether the relationship between income and achievement has changed significantly over the time span delimited by the surveys (i.e., test the three-way interaction of income x achievement x year of survey).

It is suggested that at least two indices of family income be developed in each data set: 1) a five-category breakdown of income with roughly the following distribution: bottom 15%, next 20%, middle 30%, next 20%, top 15%; and, 2) a poverty-status trichotomy dividing the children into those whose families are below the official poverty line, (the poor), those whose families are between the poverty line and 125% of poverty, (the near poor), and those whose families are above the 125% line (the non-poor). Both of these indices may have to be approximated, because of the ways in which income data have been collected in the data sets. The parent education variable should also be expressed as a five-category scale, with the education level of the more educated parent in the household coded into one of the following categories: grade school only; some high school; high school graduate; some college; or college graduate or more. The grade progress measure of achievement can be expressed as a dichotomy, for example, whether the child is in or above the modal grade for his or her age. With the Current Population Survey data, it is also possible to examine two other group measures of achievement applicable to older individuals, namely: the proportion of 17-year-olds who are still enrolled in (or have graduated from) high school; and, the proportion of 19- and 20-year-olds who have received a high school diploma (or GED).

LEVEL OF EFFORT:

It is estimated that carrying out and writing up this analysis task would require approximately nine months of effort for a Ph.D.-level analyst plus 6 months of programming and 3 months of secretarial support.

COORDINATION WITH OTHER TASKS:

It is recommended that this task be done in conjunction with Analytic Task #4. There is considerable overlap of the databases that would be used in the two tasks.

Summary of Survey Databases That Can Be Used to Link Family Income to Student Achievement

Database (Source)	Year Collected	Age Range Covered	Measures of Student Achievement	Poverty Status Indicator
Current Population Survey - October Education Supplement (Census Bureau)	Annual, 1984 and earlier	Ages 6-18+[a]	--Placement in modal grade for age --Dropout status (for older adolescents) --High school diploma or G.E.D. (for older adolescents)	Yes
English Language Proficiency Study (Census Bureau/U.S. Department of Education)	1982	Ages 5-18+	--Scores from multi-part test of English language proficiency --Placement in modal grade for age	Yes
National Survey of Children, Wave II (Child Trends)	1981	Ages 11-16	--Numerous, including teacher ratings of academic performance and need for remedial instruction	No, but can be approximated from data on family income and household composition
High School and Beyond (National Center for Education Statistics)	1980, 1982	High school sophomores and seniors	--Numerous, including vocabulary, reading and math test scores, grades, and teacher evaluations	No, but can be approximated from data on family income and household composition
Child Health Supplement (National Center for Health Statistics)	1981	Ages 6-17[a]	--Parent report of grade placement, academic progress, and grade repetition	No, but can be approximated from data on family income and household composition

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Summary of Survey Databases (continued)

Database (Source)	Year Collected	Age Range Covered	Measures of Student Achievement	Poverty Status Indicator
Sustaining Effects Study (U.S. Department of Education)	1976-80	Grades 1-6	--Numerous, including reading and math test scores, placement in remedial class, etc.	No, but can be approximated from data on family income and household composition
National Survey of Children, Wave I (Child Trends)	1976-77	Ages 7-11	--Numerous, including vocabulary test score and teacher ratings of academic progress and need for remedial instruction	No, but can be approximated from data on family income and household composition
Health Examination Survey, Cycle III (National Center for Health Statistics)	1966-70	Ages 12-17	--Numerous, including vocabulary, block design, reading, and math test scores, and teacher reports on need for special school resources	No, but can be approximated from data on family income and household composition
Health Examination Survey, Cycle II (National Center for Health Statistics)	1963-65	Ages 6-11	--Numerous, including vocabulary, block design, reading, and math test scores, and teacher reports on need for special school resources	No, but can be approximated from data on family income and household composition

[a]Younger children are included in these surveys, but the available measures of achievement are not relevant for these children.

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ANALYTIC TASK #3: Relating Income and Achievement (School and District Level)

PURPOSE: To demonstrate, using the most recent data available, the extent to which students who need remedial instruction are concentrated in school districts containing large numbers of low-income families.

RATIONALE: When Congress passed Title I of the Elementary and Secondary Education Act of 1965, it recognized not only that children from low-income families tended to have special educational needs, but also that the concentration of low-income families in a residential area created particular educational challenges for the schools and the local education agency in that area. Residential segregation by economic class and race is still an obvious reality in U.S. society. However, there have been changes as far as the schools are concerned. The average sizes of schools and school districts in the U.S. have grown larger in the last two decades, for example, and busing for purposes of correcting racial imbalance is routinely practiced in many localities. Thus, it is worth asking to what extent students in need of compensatory instruction are still concentrated in low-income school districts. The results of such an analysis can show, on the one hand, that the correlation between income and achievement is magnified as one moves from the individual to the school-district level. On the other hand, the results can show just how many students there are who are in need or remedial instruction but who do <u>not</u> live in low-income school districts.

RECOMMENDED DATABASES: Unfortunately, there is no up-to-date national database that is wholly suitable for this task. The best candidate on the national level is the <u>Sustaining Effects Study</u> (SES), which dates back to 1976-77. Despite its vintage, it is recommended that some use be made of the SES data set to produce the kinds of information specified below. It is suggested, however, that the main focus of the analysis should be on more recent data drawn from one or more large local school systems. where the same standardized achievement tests are used by all the schools and school districts in the area.

An example of such an area (though hardly a typical one) is New York City, where all students in the public elementary and junior high schools take the Metropolitan Achievement Test each year, and information on the test performance of students in each school (e.g., the proportion of students in the school who are reading at or above grade level) is published annually. With such data, it is possible to relate the average tested achievement level of students in the schools in each district to 1980 Census data on family-income levels in the district (the latter data have already been developed by the Census Bureau). Obviously, the results of an analysis based on these data would be exemplary, rather than representative of the situation in the nation as a whole. Nevertheless, when taken in conjunction with the older national data from the SES, it should be possible to make some reasonable generalizations about the overall picture.

Note that data from the Current Population Survey Education Supplement might be used to relate district poverty levels to achievement, provided that information on the school districts in which the sample households fall could be obtained from the Census Bureau. Even if this information could be gotten, however, there would still be the problem of the ambiguity of the grade placement measure, which is the only index of pupil achievement that is available in the CPS. School districts are not uniform in their grade promotion policies, and this variation would muddy any conclusions about variations in the proportion of students in poor versus non-poor districts who are behind the modal grade for their age. For these reasons, use of the CPS for this task is not recommended.

ANALYSIS PROCEDURE:

Once the required data have been obtained and, if necessary, put into machine readable form, the following steps should be carried out:

a) divide the school districts in the sample into at least a poor-versus-non-poor dichotomy, and, if possible, into a more detailed income classification involving 3-to-5 categories;

b) develop achievement indexes for the overall sample and for each school and district in the sample. (If possible, it is recommended that two indexes be calculated: a mean reading achievement

test score for each school and district, and the proportion of students in each school and district who score two or more grade levels below the modal grade for their age.);

c) calculate mean achievement indexes for all poor districts combined and all non-poor districts combined, and for each of the more detailed income categories;

d) partition the total variance in school achievement levels into the following components:

-- the variance between poor versus non-poor districts (or across different income categories);
-- the variance between districts within income categories; and
-- the variance between schools within districts;

e) evaluate the relative size of these variance components and calculate an index or association between the poverty status (or income level) of a district and its mean achievement level;

f) calculate the proportions of all students whose achievement scores are two or more grades behind their appropriate level and who come from poor districts or from non-poor districts.

A similar procedure can be followed with the Sustaining Effects Study data set except that a somewhat different breakdown is called for because of the nature of the data. The SES achievement data may be partitioned into the following components:

-- between types of district by poverty level (a 3-category poverty breakdown is available);
-- between schools within district type; and,
-- between students within schools.

With the SES data, it is also possible to cross-classify individual students by the poverty level of their families as well as the poverty level of their school districts, and to compare the achievement of students from low-income families who are in poor versus non-poor districts. It is recommended that this be done (see Analytic Task #6).

LEVEL OF EFFORT: It is estimated that carrying out and writing up this task would require approximately 3 months of

effort for a Ph.D.-level analyst plus one month of programming and one month of secretarial support.

COORDINATION WITH OTHER TASKS:

It is recommended that this task be done in conjunction with Analytic Task #5. There is some overlap in the databases to be used by the two tasks, and both make use of district-level (as opposed to an individual-level analytic framework.

ANALYTIC TASK #4: Relating Income and Quality of Educational Services (Individual Student Level)

PURPOSE: To examine the relationship between the income level of a family and various survey indicators of the quality of the public educational services available to school-aged children from the family. The indicators include: parental satisfaction with the schools their children are attending; teacher reports on class size and the availability of special educational resources; student and teacher reports on the orderliness of the classroom environment; student reports on their crime victimization experiences while at school; teacher satisfaction with the way the school is run; and teacher background characteristics.

RATIONALE: One of the concerns that orginally prompted the enactment of the federal compensatory education program was that the public educational services received by children from low-income families may be inferior in quality to those received by children from more affluent families. Among the presumed reasons for such a disparity is that in low-income areas local educational agencies do not have the same financial resources that agencies in affluent areas have to hire the best teachers and principals, purchase up-to-date textbooks and equipment, keep school facilities in good repair, etc. Other causal factors that are not so directly financial in nature may also be at work, of course. Whatever the possible reasons for a disparity, it seems appropriate to ask, as part of the Chapter 1 assessment, whether a serious gap in educational quality can be demonstrated with current (or at least fairly recent) statistical data.

The problem is that educational quality is not easy to measure, especially in a nationwide survey. There are, however, a variety of measures available in recent survey databases that can serve as partial or indirect indicators of the quality of the educational experience available to children from different family backgrounds. One such measure, for example, is based on teachers' reports of the amount of misbehavior and disruption that occurs in their classes. There is likely to be general agreement that having a reasonably orderly classroom environment is a necessary (though not a sufficient) condition for learning to proceed at an optimal pace.

The present analysis task involves assembling a variety of survey-based indicators of educational quality and correlating these indicators with the family incomes of the pupils who attend the schools in the survey samples. The following task involves correlating the income levels of school districts with more aggregate indicators of educational quality.

RECOMMENDED DATABASES: The following listing presents several different measures of the quality of the public schools attended by nationwide samples of children or adolescents, and the names and years of the survey databases in which the measures may be found:

Indicators	Surveys
a. Parent satisfaction with the public schools their children are attending	-- Annual Gallup Survey on Public Education (Use most recent year for which data can be obtained. Use only those adults in the sample who have children in school.) -- 1976-77 National Survey of Children (Parent Interview) -- 1976/77 Sustaining Effects Study (Home Interview)
b. Teacher reports on the size of the class the child attends (presuming that, other things being equal, smaller class sizes are better for students than large class sizes)	-- 1976/77 National Survey of Children (Teacher Questionnaire) -- 1976/77 Sustaining Effects Study (Teacher Question naire) -- 1981 National Survey of Children (Teacher Questionnaire)

Indicators (continued)	Surveys (continued)
c. Teacher or school reports on the availability of remedial instruction and other special resources for pupils who need them	-- 1976/77 National Survey of Children (Teacher Questionnaire) -- 1976/77 Sustaining Effects Study (Compensatory Education Roster) -- 1980 High School and Beyond Survey (Teacher Questionnaire) -- 1981 National Survey of Children (Teacher Questionnaire)
d) Teacher (or student) reports on the orderliness of the classroom environment	-- 1976/77 National Survey of Children (Teacher Questionnaire) -- 1980 High School and Beyond Survey (Student Questionnaire) -- 1981 National Survey of Children Aged 12-16 (Teacher Questionnaire)
e) Student reports of crime victimization experiences while at school	-- National Crime Survey (Conducted annually. Use most recent data that can be obtained. Covers students 12 and over only, and for 12- and 13-year-olds, parents are proxy respondents.)
f) Teacher satisfaction with the way the school is being run	-- 1976/77 Sustaining Effects Study (Teacher Questionnaire)

Indicators (continued)	Surveys (continued)
g) Teacher background characacteristics (presuming that the quality of the teaching a student obtains has something to do with the training, experience, and attitudes of his or her teacher)	-- 1976/77 National Survey of Children (Teacher Questionnaire includes information on the teacher's age, sex, ethnic group, and years of teaching experience, as well as the name and a quality rating of the undergraduate college from which the teacher obtained a bachelor's degree.) -- 1976/77 Sustaining Effects Study (Teacher questionnaire contains a variety of background information on the teacher, including years of teaching experience, education, inservice training, salary level, employment status, and attitudinal measures.)

ANALYSIS PROCEDURE:

What is needed for this task is basically a set of cross-tabulations of poverty status and income level variables (the same ones specified in Analysis Task #2) against the educational quality measures listed above. For some of the databases listed, it may be possible to subcontract with the originators of the surveys to produce the required cross-tabulations. In the case of the Sustaining Effects Study, however, the analyst responsible for this task should probably obtain the relevant data tapes and perform the necessary tabulating operations himself or herself.

In addition to examining the correlates of income as such, it would be of interest to see how income in interaction with the ethnic background of the family -- and the ethnic composition of the school -- relate to the educational quality indicators. With the SES data set, it is also possible to examine how the poverty level of the district and the income level of the family jointly relate to educational quality. This should be done.

LEVEL OF EFFORT:

It is estimated that carrying out and writing up this analysis task would require approximately 3 months of effort for a Ph.D.-level analyst plus one month of programming and one-half month of secretarial support.

COORDINATION WITH OTHER TASKS:

It is recommended that this task be done in conjunction with Analytic Task #2.

ANALYTIC TASK #5: Relating Income and Quality of Educational Services (School District Level)

PURPOSE: To examine the relationship between the average income level of families in a school district and several aggregate indicators that are thought to relate to the quality of the educational services provided in the district. The aggregate measures are: the level of per pupil expenditures for instructional purposes in the district; the pupils-to-teacher ratio for all classroom teachers; and the average annual salary levels of classroom teachers.

RATIONALE: Like the previous task, this analysis addresses the concern that local educational agencies in low-income areas find it difficult, for financial and other reasons, to provide their pupils with the same quality of educational experiences that agencies in more affluent areas can provide. This analysis focuses on aggregate measures that are available for school districts throughout the U.S. The indicators are not direct measures of educational quality. Rather, they reflect the total amount of money that is spent by local educational agencies for instructional purposes and two aspects of working conditions for teachers in the district (pupil-teacher ratios and salary levels). These variables, in turn, are presumed to relate to the calibre of teaching staff the district can attract and to the quality of the instruction provided to pupils in the district. Once again, it would be desirable to have some more direct assessments of the quality of instruction in different districts, but such indicators are not currently available on a nationwide basis.

RECOMMENDED DATABASES: The aggregate indicators of district expenditures, pupil-teacher ratios, and salary levels can be derived from the "Common Core of Data", an annual survey conducted by the National Center for Education Statistics. The program is a universe survey of all State education agencies, which agencies compile and submit data on the approximately 16,000 local public school districts that there are in the U.S. Data on the 1982-83 school year are currently available.

Data on poverty and average family income levels in school districts around the U.S., based on the 1980 Census, are available from the Bureau of the Census.

ANALYSIS PROCEDURE:

The first and possibly the most challenging operation required to carry out this task is to link the Census data on district income levels with the NCES data on educational expenditures and staffing. Obviously, this does not need to be done for all districts in the U.S. Some sort of representative sampling would be sufficient.

Once the linkage has been accomplished, the indicators can be derived as follows:

-- Divide total expenditures for instructional purposes by the number of pupils in the district to get expenditures per pupil.
-- Divide the total number of pupils by the total number of classroom teachers to get the pupils-per-teacher ratio.
-- Divide total instructional expenditures by total number of teachers to get a rough index of average salary levels. (This formula may require some adjustment based on consultations with knowledgeable individuals at NCES.)

The educational indicators can then be cross-tabulated and correlated with the poverty status and income levels of the sample districts. (The latter variables to be coded as in Analysis Task #3.) In relating district income levels to expenditures and salary levels, it would be well to take geographic variations in the cost of living into account. This can be done by breaking down the sample of districts into smaller geographic areas, each of which is relatively homogeneous in terms of cost of living, and then repeating the analysis for each of these areas.

LEVEL OF EFFORT:

It is estimated that carrying out and writing up this analysis task would require approximately 3 months of effort for a Ph.D.-level analyst plus 2 months of programming and one-half month of secretarial support.

COORDINATION WITH OTHER TASKS:

It is recommended that this task be carried out in conjunction with Analytic Task #3.

ANALYTIC TASK #6: Comparing Poor Children from Low-Income Districts with Poor Children from Other Districts

PURPOSE: To assemble evidence that would permit an assessment of the notion that children from low-income families who go to school in areas where there are high concentrations of poverty are at greater risk of educational failure than children from low-income families who go to school in other areas. The analysis would begin by determining whether and how the geographic concentration of poor children seems to be changing over time. It would go on to compare the academic achievement of poor children in low-income areas with that of poor children in other areas. It would also compare the educational resources available to both groups of poor children, and to children from non-poor families who go to school in poor or non-poor districts.

RATIONALE: The legislation that initiated the federal compensatory education program declared it to be the policy of the United States to provide financial assistance to local educational agencies serving areas with concentrations of children from low-income families in order to help meet the special educational needs of these children. This policy implied that children from low-income family backgrounds who went to school in poverty areas were at particular risk of educational failure and that the school districts that served these children were in particular need of financial assistance. The elaborate funding formulas that were written into the legislation and attendant regulations were attempts to direct federal assistance toward school districts in poverty areas. However, recent Census data show that the majority (something like 63 percent) of U.S. children from poor families do <u>not</u> live in areas where there are high concentrations of poverty. And, as it turns out, at least some of the federal compensatory education funds wind up going to nearly 88 percent of all school districts in the nation. Nevertheless, it would be worthwhile, as part of the Chapter I assessment, to see whether empirical evidence supports the original notion that poor children in poverty areas are at greater risk of school failure than poor children in other areas. The results of such an analysis would be of interest in their own right and could help to guide possible modifications or additions to current funding procedures.

RECOMMENDED DATABASES:

For tracking change over time in the geographic concentration of poor children in the U.S., the analyst should make use of data from the Current Population Survey and the decennial Censuses. It may not be necessary to produce new tabulations for this purpose, as the Census Bureau has published data that permits the calculation of the proportion of the poor population that lives in areas with high concentrations of poverty (see, for example, Current Population Report P-60, No. 144, Tables 4 and 19). What is required is to assemble these data for as many years in succession as possible (including any recent unpublished tabulations that the Bureau can provide) and then to test for secular trends.

For examining differences in achievement and educational resources, the richest database is the Sustaining Effects Study (see write-ups of Analysis Tasks #2 and #3). This database has information on the family income of the children in the sample, plus a three-category classification of the poverty level of the school district, plus numerous measures of the students' academic achievement, as well as data on any remedial instruction they are receiving, and information on the overall quality of educational services in the school (see write-up of Analysis Task #4).

One drawback of the Sustaining Effects Study (SES) is that the information it contains is somewhat dated, going back as much of it does to 1976-77. Therefore, the analyst should look into the possibility of supplementing the SES-based analysis with examination of other data sets, such as the English Language Proficiency Study (ELPS) (see write-up of Analysis Task #2) or data from one of the local studies that are to be specially commissioned for the Chapter I assessment. The ELPS data would be usable for this purpose if they contain, or if it is possible to obtain from the Census Bureau, information on the average income levels of the different sampling areas from which the study sample was drawn.

ANALYSIS PROCEDURE:

The procedure for the trend portion of this analysis has been outlined in the previous section. Basically, one wants to ascertain whether there is any statistically reliable evidence that the proportion of poor children who live in areas where there are high concentrations of poverty is increasing or decreasing over time.

The examination of differences in achievement and educational resources entails using the information contained in the survey to cross-classify students according to the poverty status of their families and the poverty status of the school districts in which they reside, and then to predict the achievement and resource measures from the cross-classified variables. In analysis-of-variance terms, one wants to test the main effect of family poverty level, the main effect of school district poverty level, and the interaction of type of family by type of school district, while simultaneously controlling for each of the other effects.

It is recommended that a trichotomous classification (e.g., poor, near poor, non-poor) be used for both families and school districts. It is also recommended that controls for parent education level and ethnic group be introduced after the basic analysis has been run, to see what effect these controls have on the relationships observed in the first part of the analysis.

Obviously, the main focus of the analysis should be on whether there are significant differences between poor children in poverty areas and poor children in non-poverty areas. But it is also of interest to find out whether children from non-poor families who go to school in poverty areas appear to be at any disadvantage because of this fact and to assess whether compensatory resources seem to be going to the students who are most in need of them. For the latter purpose, the analyst should examine the average test scores that seem to mark the threshold at which students in the different family-type and district-type groups become eligible for remedial instruction. Is there evidence, for example, that children in non-poor districts receive remedial help even through their test scores are at or above those of children in poor districts who do <u>not</u> receive such help? If so, this would indicate that different standards for the delivery of compensatory services, are being used in different types of districts, to the possible detriment of some children in poor districts.

LEVEL OF EFFORT:

It is estimated that carrying out and writing up this task would require approximately three months of effort for a Ph.D.-level analyst plus one-and-a-half months of programming and one month of secretarial support.

COORDINATION WITH OTHER TASKS:

The trend assessment portion of this task should be coordinated with Analysis Task #1, which also involves the use of data from the Current Population Survey to track changes in the demographic characteristics of the low-income child population. As mentioned above, however, it may not be necessary to carry out special computer runs with the CPS tapes, to generate the data required for this portion of the analysis.

The comparison of poor children in poverty and non-poverty areas should be coordinated with Analysis Tasks #2, #3, and/or #4, which also make use of the Sustaining Effects Study and other databases that may be used for the present task.

ANALYTIC TASK #7

Relating Maternal Employment and the Child's Participation in Preschool Programs to the Achievement of Children from Low-Income Families

PURPOSE:

To assemble evidence, both from existing studies and from new tabulations of national survey data, bearing on the relationship of the mother's employment history, and the child's participation in preschool programs, to the academic achievement of children from low-income families. This evidence could assist in determining whether the federal compensatory education program should place greater emphasis on providing assistance for prekindergarten programs and for after-school programs for school-aged children who have no caretaker at home in the afternoons.

RATIONALE:

One of the major demographic trends of the last 20 years, which has affected both poor and non-poor children has been the tremendous growth in the proportion of women who resume working for pay outside the home while their children are still relatively young. In 1983, 63 percent of U.S. school-aged children (ages 5-17 years) and 54 percent of preschoolers (ages 0-4 years) had mothers who worked outside of the home for at least part of the year. Women in families below the poverty line are much less likely to be working than women in families above the poverty line. (Having a job often makes the difference between being in poverty or not.) Even so, nearly 37 percent of all U.S. children (ages 0-17) in families below the poverty line in 1983 had mothers who worked outside the home at least part of the year.

The increase in maternal employment has meant that many families have to arrange for substitute care for their young children during the hours when the mothers work. It has also meant that many school-aged children have to look after themselves when they get home from school in the afternoons. The need for substitute care has probably helped to fuel the growth in preschool and nursery school programs in the U.S. Between 1965 and 1980, the proportion of 3- and 4-year-olds enrolled in preschool or nursery school rose from 11 percent to 37 percent. There has also been a great deal of attention paid in educational circles and in the popular media to the importance of early childhood training in preparing the child for later success

in elementary school. Nevertheless, it is still the case that there are large socioeconomic differences in young children's participation in preschool programs. Thus, the National Center for Education Statistics reported that in 1980 about 39 percent of 4-year-olds from families with annual incomes below $10,000 were enrolled in preschool programs, compared with 63 percent of 4-year-olds from families with incomes of $20,000 and over.

Given these continuing disparities, and the growth of maternal employment, it seems logical to ask whether the federal compensatory education program should be restructured or supplemented in some way that would place greater emphasis on preschool programs and on after-school programs for so-called "latchkey" children. Expanded access to early childhood education and after-school programs for children from low-income families might even make it more feasible for the mothers of these children to participate in "workfare" programs or find entry-level jobs that could eventually raise them out of poverty. On the other hand, it can be argued that it is not the federal government's proper role to dictate to the States how to spend education funds; that it is the prerogative of state and local authorities to decide whether to place more resources into early childhood and after-school programs. Moreover, some would contend that it is better for a child's intellectual development to have its mother stay home and provide it with personal attention than to be packed off to a preschool program with a lot of other young children.

The present analytic task is intended to address issues such as these with the best available data. This includes data on the relationship between maternal employment and children's academic performance (in both two-parent and single-parent families); on the relationship between participation in Head Start or other preschool programs and later academic success; and on the possible benefits of after-school programs for children from low-income families.

RECOMMENDED DATABASES:

There are two parts to this task: a) running new tabulations with available national survey data; and, b) compiling relevant findings from previous studies. For the secondary analysis portion of the task, the recommended database is the Sustaining Effects Study (see write-up for Analysis Tasks #2

and #3). The SES database has information on: the mother's labor force participation during each of the three years prior the household survey data; family composition; the child's participation in Head Start and/or other preschool programs (although these data leave a good deal to be desired in terms of their specificity and detail); and, of course, a rich array of measures of academic achievement and the use of compensatory services.

An analysis of maternal employment effects using the SES data has already been carried out by Ann Milne, David Myers, and Fran Ellman of Decision Resources, working in collaboration with Alan Ginsburg of the U.S. Department of Education (Milne et al, 1983). One of the major findings of this study was that the apparent effects of maternal employment were quite different in white and black two-parent households than in black single-parent households. In two-parent families, maternal employment was associated with somewhat lower student achievement, when other factors were controlled, whereas in the black single-parent families, maternal employment was associated with better school performance by the children. Similar contrasts between maternal employment-student achievement relationships in two-parent and single-parent families have been reported by Nicholas Zill of Child Trends (working with data from the National Survey of Children) and Suzanne Bianchi of the Bureau of the Census (working with data from the Current Population Survey). Further analysis of the SES data set seems warranted, however, particularly work that focuses on the low-income population and on possible interactions between maternal employment, participation in preschool programs (or other educational activities), and achievement in elementary school.

If time permits, it would also be desirable to examine maternal employment-student achievement relationships in the English Language Proficiency Study (see write-up for Analytic Task #2), where the achievement data (and the labor-fore participation patterns) are of more recent vintage than those from the SES. One drawback of the ELPS data set is that it only has information on the current employment status of the mother, rather than some sort of multi-year employment history. There is also only current information about the child's participation in nursery school or kindergarten programs.

As far as the compilation of results from previous studies is concerned, the analyst should make use of the sources listed in the table below, among others.

ANALYSIS PROCEDURE:

If the database permits it, maternal employment should be coded so as to allow a differentiation between full-time and part-time employment, and between mothers who resumed work before the child started regular school and those who waited until the child was of school age before they went back to work. The child's preschool experience should also be coded in as much detail as the database permits with respect to such matters as the type and duration of the program.

The analyst should then examine the following relationships in both the general child population and the low-income population (poor and near-poor):

-- the relationship between maternal employment and measures of the child's academic achievement, in both two parent and single-parent families, and with controls for parent education level, income, ethnic group, and family size;

-- the relationship between the child's preschool experience and measures of achievement, in both two parent and single-parent families, with the same control variables;

-- the interaction between maternal employment, preschool experience, and academic achievement, in both types of families and with the same control variables.

Findings from previous studies with regard to the above relationships should be examined and summarized.

LEVEL OF EFFORT:

It is estimated that carrying out and writing up this analysis task would require approximately three months of effort for a Ph.D.-level analyst plus one month of programming and one month of secretarial support.

COORDINATION WITH OTHER TASKS:

It is recommended that this task be cordinated with Analysis Tasks #2 and #6 which also make use of data from the Sustaining Effects Study and deal with related analytic issues.

Previous Studies on Maternal Employment and/or Preschool Participation and Student Achievement

Investigator, Institution	Database Analyzed	Key Reference
Suzanne M. Bianchi U.S. Bureau of the Census Suitland, MD	Current Population Survey	Bianchi, 1984
Michael Grossman and colleagues National Bureau of Economic Research New York, NY	Cycles II and III of the Health Examination Survey	Edwards and Grossman, 1979
Lois W. Hoffman Department of Psychology University of Michigan Ann Arbor, MI	Literature review on effects of maternal employment	Hoffman, 1980
Ruth Hubbell CSR Associates Washington, DC	Literature review, annotated bibliography, and program effects database on Head Start programs	Hubbell, 1983
Irving Lazar and Richard Darlington (Co-Directors) Consortium for Longitudinal Studies Cornell University Ithaca, NY	Combined database consisting of a number of relatively small longitudinal studies of preschool program participants	Consortium for Longitudinal Studies, 1983
Martin Levin and colleagues Emory University Atlanta, GA	Cycles II and III of the Health Examination Survey	Doby, Levin and Mitra, 1980

Previous Studies on Maternal Employment and/or Preschool Participation and Student Achievement

(table continued)

Investigator, Institution	Database Analyzed	Key Reference
David Myers, Ann Milne, and colleagues Decision Resources Washington, DC	Sustaining Effects Study	Milne *et al*, 1983
Washington, DC	High School and Beyond	Myers *et al*, 1983
Panel of Work, Family, and Community Commission on Behavioral and Social Sciences and Education Washington, DC	Literature review on effects of maternal employment	Hayes and Kamerman, 1983 (includes compendium of Existing Data Sources for Researcher in Appendix)
David P. Weikart High/Scope Educational Research Foundation Ypsilanti, MI	Perry Preschool Program Program Follow-up Study plus literature review of other longitudinal studies of preschool effects	Berrueta-Clement *et al*, 1984
Nicholas Zill Child Trends Washington, DC	National Survey of Children	Zill, in press

ANALYTIC TASK #8

Assessing the Need for Strengthening Compensatory Education Programs at the Secondary School Level

PURPOSE:

To assemble evidence regarding the schooling and academic performance of students from low-income families in junior high school and high school in order to evaluate the extent to which such students need and are getting remedial instruction. This evidence could assist in determining whether the federal compensatory education program should place greater emphasis on providing assistance to compensatory efforts at the secondary level.

RATIONALE:

With the assistance of federal funds, many elementary-school children from low-income families receive remedial instruction in reading, mathematics, and other subjects while they are in the primary grades. Once they reach junior high school or high school, however, the compensatory efforts often come to an end or continue at a very reduced level. Yet the students involved frequently need continued assistance and support in order to cope with the requirements of the secondary school curriculum. The lack of such support probably contributes to the substantially higher rates of high-school dropout that are observed in low-income school districts. It may also help to account for the pattern of results noted in the National Assessment of Educational Progress (NAEP, 1981), wherein more progress has been noted in narrowing the achievement gap between students from disadvantaged urban communities and those from other communities, and between black students and white students, at the elementary level than at the secondary level. Finally, in some school systems, the lack of remedial programs at the secondary level has apparently led to the practice of inappropriately classifying students from low-income backgrounds as having learning disabilities, so that they may at least receive special instruction under the education-for-the-handicapped program.

The present analytic task is designed to compile evidence from available survey databases on: the size of the achievement gap between students from low-income and non-low-income backgrounds at the secondary level; the proportions of low-income high school students who are perceived by their teachers to need remedial instruction; the proportions who

actually receive some sort of remedial assistance; and the link between the need for remediation and dropping out of school.

RECOMMENDED DATABASES:

Two databases that would be appropriate for this task are the NCES High School and Beyond Study and Wave II of the National Survey of Children. High School and Beyond has reading and mathematics test scores for a national sample of high school sophomores and seniors in 1980 and 1982; plus information on courses taken by the students; as well as teacher evaluations on a subset of the students (albeit a rather limited set of questions). It is also possible, with the 1980 sophomores, to relate achievement level and receipt or non-receipt of remediation in the sophomore year to drop-out status as of 1982.

The National Survey of Children has extensive teacher evaluations on a national sample of 12-16 year-olds in 1981. The teacher questionnaire included questions about the student's need for and receipt of remedial reading and other remedial instruction.

ANALYSIS PROCEDURE:

After setting some defensible criterion for determining that a student's tested achievement is seriously behind the average of his grade-level peers, the analyst should determine what proportion of students from low-income families in the High School and Beyond sample meet this criterion, and what fraction of <u>those</u> students seem to be receiving some form of appropriate special instruction for their deficiencies. These proportions for low-income high school students should be compared with the parallel proportions for: a) non-low-income high school students; and, b) low-income grammar-school students (the latter proportions would have to be gotten from a data set other than High School and Beyond). The analyst should also use the achievement and remediation measures to predict to dropping out between 1980 and 1982 among the low-income sophomores in the sample. The analysis with the NSC data would consist primarily of tabulating the proportions of low-income students at various grade levels who are judged to be in need of remediation, and who are or are not actually receiving some remedial instruction. These proportions could again be

compared with the equivalents for non-poor adolescents and for poor and non-poor primary students.

LEVEL OF EFFORT: It is estimated that carrying out and writing up this analysis would require approximately three months of effort for a Ph.D.-level analyst plus one month of programming and one month of secretarial support.

COORDINATION WITH OTHER TASKS: It is recommended that this task be coordinated with Analytic Tasks #2 and #4, particularly with regard to work with the High School and Beyond and National Survey of Children databases.

ANALYTIC TASK #9: Relating Frequent Residential Moves to the Achievement of Children from Low-Income Families

PURPOSE: To evaluate the importance of the educational discontinuities that many low-income students experience because of the residential instability that often characterizes their family lives. The analysis involves the use of databases that contain both measures of student achievement and information on the frequency with which the student's family has changed its residence. In order to estimate the size of the negative impact that frequent moving may have on achievement, the two variables would be related while controlling for possible confounding factors, such as parent education, race, and family size.

RATIONALE: Low-income families, especially those in the inner cities, often have to go through a number of residential moves in a short time period because of rundown housing and neighborhood decay, inability to make rent payments, family instability, etc. Although poor families are less likely than more affluent families to make long-distance moves between cities or states, they are more likely to make relatively short-distance moves within a city or metropolitan area. But while these moves may not involve long distances, they often mean a change of schools for the children in the family. Frequent changes of schools may, in turn, be detrimental to a child's educational progress because of the disruptions they create in the instructional program the child receives. The high rates of student turnover that are typical of many inner-city schools may also contribute to administrative and morale problems for the pricipals and teachers of these schools.

The goal of the present task is to estimate the magnitude of the negative impact that frequent moves may have on the educational achievement of students from low-income families. If the effects appear to be sizable, Congress may want to insert language into the compensatory education legislation that recognizes the importance of educational continuity and encourages local school authorities to institute administrative procedures (such as the use of flexible school assignment practices) that would promote continuity.

RECOMMENDED DATABASES: Databases that include both measures of student achievement and information on the number of residential moves that the family has made in the student's lifetime are the 1981 Child Health Supplement to the National Health Interview Survey and the National Survey of Children.

ANALYSIS PROCEDURE: The procedure involved here is simply to use the available measure of family residential mobility to predict variations in the available measures of student achievement, while simultaneously controlling for possible confounding factors such as parent education, family income, ethnic group, and family size. This should be done for both the entire sample of students and the low-income portion of the sample. Variations in the size of the effects across different grade levels should also be examined.

LEVEL OF EFFORT: It is estimated that carrying out and writing up this task would require approximately two months of effort for a Ph.D.-level analyst plus one-half month of programming and one-half month of secretarial support.

COORDINATION WITH OTHER TASKS: This task should be coordinated with Analytic Task #2 and other tasks that involve the use of data from the Child Health Supplement or the National Survey of Children.

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